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MIRROR REFLEX MOTION PICTURE CAMERA

ARRIFLEX 16 BL

Construction and Design:

The ARRIFLEX 16 BL is a noiseless 16 mm mirror reflex newsreel camera with electric drive. In order to maintain the excellent technical features of the proven ARRIFLEX Models 16 St and 16 M (precision film retaining claw, forward and reverse operation, tachometer, footage indicator, interchangeable motors, mirror reflex system, etc.) achieve a low level of noise, and avoid excess weight, this new camera has been built with a so-called "fully sound-proofed" construction in which all components that produce or conduct noise have been insulated at the camera body. This applies to the entire camera driving mechanism including the film transport system, the interchangeable motors, the lens, the viewfinding system, and the magazines. This construction makes the ARRIFLEX 16 BL an extremely versatile, noiseless, and relatively light-weight newsreel camera which can be used equally well mounted on a tripod or hand-held, with or without shoulder support. Taking into consideration today's highly advanced zoom lenses, the ARRIFLEX 16 BL has been equipped with only one lens mount, especially designed for the use of zoom lenses although it also takes normal ARRIFLEX lenses. The lenses can be interchanged quite easily. The ARRIFLEX 16 BL works with quick-changing magazines with built-in feed and take-up mechanisms. The film transport is the same as in the ARRIFLEX 16 St and 16 M with its precision film retaining claw for forward and reverse operation. The viewfinding system is different in some respects from the other ARRIFLEX 16 models, the most important difference being the relocation of the ground glass in the forward focal plane.

The operating controls normally firmly coupled with the camera mechanism are insulated in the ARRIFLEX 16 BL to prevent the conducting of body noise from the camera interior. This applies to the lens controls for focus, focal length, diaphragm, manual control knob, re-set for the footage indicator, and the two knurled disks for taking up film slack in the magazine. The three lens controls are connected to the lens adjustment rings by means of rubber elements. The latter four control knobs mentioned above are completely disengaged and must be pressed in to couple them with the gears of the camera mechanism.

1. The Interchangeable Sound-proofed Lenses of the ARRIFLEX 16 BL

The lenses for the ARRIFLEX 16 BL are contained in an insulated outside casing and can be changed quickly. The lens and outer

casing are a single unit, although each connects separately with the camera. The lens locks inside the camera, whereas the casing is locked on the camera housing. The plexiglass windows on the housing enable reading of the original lens scales. For focusing, focal length, and the diaphragm additional scales are located on the adjustment rings of the casing and can be read off at the index marks on the side by the camera assistant. The adjustment rings have been equipped with grips for easy operation. For comfortable adjustment of the zoom lens a detachable lever has been added to enable quick changes in focal length. The lens outer casing is equipped with a hinge so that the front part becomes a door for the filter holder. By means of a tension lock the filter or plane glass holder is firmly pressed against an elastic, sound insulating support. Only normal 75 x 75 mm (3 x 3") filters are to be used. The adjustable sunshade is locked on at the front of the hinged door.

2. Mirror Reflex Viewfinder System

In contrast to the previous models of the ARRIFLEX 16, the ARRIFLEX 16 BL has its ground glass at the front as does the ARRIFLEX 35. The glass area framing the format is transparent but darker than the format itself. In this manner objects located outside of the picture can also be seen. The ground glass holder is fastened parallel to the ground glass surface. The film and ground glass images are identical and free of parallax. The ground glass can be exchanged for one of a different format without influencing the adjustment. The viewfinder assembly is built into the camera door and the image is viewed through an eyepiece. In contrast to other ARRIFLEX cameras, the viewfinder image is transferred by reflection to the side of the camera to enable a better hold on the camera during hand-held shots. The viewfinder tube is mounted so that it can be turned or swiveled in any direction. The detachable viewfinder eyepiece is different from previous standard models in that it is equipped with an automatic closure mechanism which opens automatically when the eyecup is pressed against the eye. The rotatable rubber eyecup can be removed. The automatic closure mechanism can be locked at open position. This is especially practical for hand-held shots (from a moving car, etc.) during which it is difficult to hold the camera steady.

The detachable rubber eyecup has the additional advantage that each operator of the camera - especially if he is a wearer of glasses - can use his own eyecup. At the back of the eyecup a centered recess is provided for the mounting of a prescription lens by an optician. As the rubber eyecup is made to fit the eye anatomically, lenses for the correction of astigmatic eye deficiencies can be mounted in the correct axial position.

3. The 400 ft (120 m) 16 BL Magazine

This quick-changing magazine with built-in feed and take-up mechanism holds 400 ft (120 m) of film. If black and white film is used, film rolls with a total length of 500 ft (150 m) can be used.

In addition, this magazine is equipped to take 100 ft (30 m) and 200 ft (60 m) daylight-loading reels.

Magazine Drive. The magazine is driven by the camera mechanism. It runs entirely on ball bearings. In order to reduce noise to a minimum, metal gears have been paired with plastic ones.

Magazine Mouth. The feed and take-up sprockets in the mouth of the magazine guarantee that the loop of film in the interior of the camera remains at a constant length whether the camera is in forward or reverse drive. The magazine mouth has a labyrinth-type film channel which acts as a light trap to keep out stray light. In this manner the use of velvet for the same purpose was avoided. The dovetail foot of the magazine serves to mount the magazine upon the camera.

Feed and Take-up Spindles. The take-up friction units for forward and reverse drive act automatically and alternate according to the direction in which the camera is operating. The correct friction force is adjusted at the factory. The left spindle has a removable film core holder; the right spindle has a removable collapsible take-up core. If the daylight-loading reels are used instead of film rolls upon plastic cores, the film core holder and collapsible take-up cores must be removed.

Collapsible Take-up Cores. The collapsible take-up core offers considerable advantages. The film leader is clamped fast so that unintentional loosening and the resulting complications cannot occur. The diameter of the clamped core is 2" (50,8 mm). The film winds round the core to form a perfect roll, thus eliminating the possibility of the roll becoming uneven. When the clamp is released, the film leader is let loose. At the same time the diameter of the take-up core reduces itself so that the roll of film can be taken out easily.

Film Tension Rollers. The film tension rollers are only used for film on plastic cores. The rollers are mounted on swinging arms and are profiled to keep the film edges even while the film is taken up smoothly. At the same time, the front tension roller measures the size of the feed roll, which then can be read off at the magazine film supply indicator in feet or metres.

Film Supply Indicator. The film supply indicator located on the rear side of the magazine refers to black-and-white film. If colour film is used, the film supply can be estimated by subtracting 10% from the footage shown. The indicator is available with scales in metres and feet; these are interchangeable.

4. Drive and Power Connexion for the Camera

The interchangeable motor has an average speed of 3000 RPM, no matter if the governor-controlled D.C. motor or the synchronous motor is used, whether the camera is operated at 25 or 24 f.p.s. The frame speed difference between 25 and 24 f.p.s. is attained by exchanging a pair of gears. In exchanging motors there is only a choice between governor-controlled or synchronous electric

drive or possible hand-regulated drive. The pilot tone generator is connected directly to the motor shaft, so that the pilot frequency remains constant at 50 cycles, whether the camera is operated at 25 or 24 f.p.s. For countries with a standard frequency of 60 cycles where a pilot tone frequency of 60 cycles and a film speed of 24 f.p.s. are usually used because of the fact that the motor speed depends upon the frequency of the current and the fact that the pilot tone generator is connected to the motor shaft, motors with pilot tone generators for 60 cycles and 3600 R.P.M. are available. The D.C. motor is designed for a standard rated voltage of 12 V, the governor-controlled motor is transistorized. The ARRIFLEX 16 BL is usually driven by this motor, which is fed from a 12 V battery and can be set for forward and reverse drive. One control lamp (the middle one under the plexiglass cover at the rear of the camera) is a blinking signal light which indicates when the camera is running. As with all other ARRIFLEX camera types, the correct polarity is important when using the governor-controlled D.C. Motor. The plugs on both ends of the power cable are of a special design so that the operator of the ARRIFLEX 16 BL need pay no special attention to polarity, provided that original ARRI-power cables and the proper batteries are used and that the installation has not been tampered with.

Starting the Camera

The camera can be switched on at three different points. When using the tripod or for hand-held shots without the pistol grip screwed into the tripod socket, the front switch at the handgrip on the side of the camera is used. Upon being pressed, this switch locks itself automatically for continuous filming. By pressing the second switch, the camera can be switched off again. For short takes where the switch need not be locked, the second switch is used alone. The camera only runs so long as this is pressed in. During reportage shots with the shoulder support and handgrip or with the pistol grip alone, the camera is turned on by using the switch on the pistol grip in the same way as with other ARRIFLEX 16 cameras (the switch operates through the tripod socket).

5. Pilot Tone and Start Marking System

The pilot tone and start marking system of the ARRIFLEX 16 BL is identical in operation to that used in the latest models of other ARRIFLEX 16 cameras.

The two-pole pilot tone generator is connected directly to the motor shaft of the governor controlled motor. This has the advantage that, in spite of the change between 24 and 25 f.p.s., the pilot tone frequency remains constant at 50 cycles. The pilot voltage produced is transported through the pilot tone conductor and a socket at the connexion box at the rear of the camera. This connexion box contains the automatic start marking system, the conventional 5-prong pilot tone socket and, under a plexiglass cover, the control lamp for the full frame exposure of the start marking system (left lamp). An edge marking system can also be

built into this box. The 1000 cycle oscillator, usually delivered extra, is built into the connexion box and operated over a cable by means of a push-button. The right-hand lamp controls the edge marking system. The third control lamp (between the other two) acts as a blinking signal to indicate when the camera is running.

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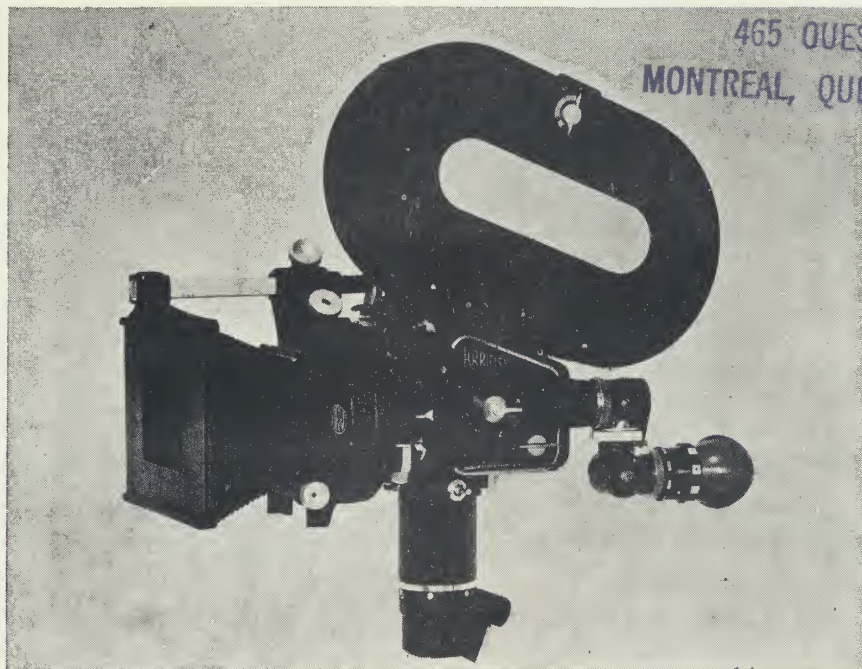


FIG. 1—THE NEW ARRIFLEX-35 II-C features a new, improved reflex finder system that produces brighter, clearer image. Camera is shown here with accessory periscope finder attachment, gear-driven 400-ft. magazine, and transistorized governor-controlled motor.

Greater versatility and operating convenience feature . . .

The New, Improved Arriflex-35

By JOSEPH HENRY

WITHOUT MATERIALLY altering the familiar basic contour of the 35mm Arriflex, the manufacturer has wrought a number of innovations and improvements in this popular reflex camera in a recently-announced new Model II-C, promising even greater versatility and operating convenience.

The earlier Model II-B series is discontinued. The new Model II-C which replaces it incorporates a completely new reflex optical system that produces a much brighter and clearer finder image. The finder has been enlarged and it now shows the full field for the CinemaScope aperture of .735" x .686" (2.35-to-1 aspect ratio). The previous viewfinder did not show the full .735" height of this format.

The finder eye-piece is a new separate and detachable assembly offering these important advantages: 1) Interchangeability with a special accessory eyepiece having an automatic closure mechanism. 2) Both the new standard

eye-piece and the new automatic eye-piece have a mount into which a corrective 15.2mm spectacle lens may be mounted. Cameramen who wear glasses will particularly welcome this feature. The spectacle lens can be supplied and inserted by the cameraman's own optician.

The Periscope Finder Attachment, which is a new feature and pictured on the camera in Fig. 1, may be used on those cameras equipped with the detachable eye-piece system. The periscope attachment shows a large, clear circular field of approximately 22mm, which all but covers the full CinemaScope field of view.

While the periscope attachment vignettes this format at the corners, it will be very useful in ultra-closeup photography.

The new eye-piece has an improved diopter adjustment and lock operated by a large knurled ring. Standard equipment is the manually operated



FIG. 2—Now camera owner may change ground-glass without tools, inserting new glass through open lens socket in turret.

closure mechanism, mentioned earlier, which effectively eliminates stray light entering the reflex finder. On special order, this mechanism can be replaced by an anamorphic lens element that provides an unsqueezed finder view when CinemaScope, Ultrascope or other anamorphic objective lenses are used for photography. When the new type finders are so equipped they will provide correct viewing selectively when either spherical or anamorphic lenses are used on the camera.

Interchangeable ground glasses are an important feature of the model II-C. The cameraman may change these glasses himself simply by removing a lens from the turret and inserting the new glass through the open lens



FIG. 3—Side view of new Model II-C Arriflex-35 shows camera equipped with leather matte box, adjustable for various lengths.

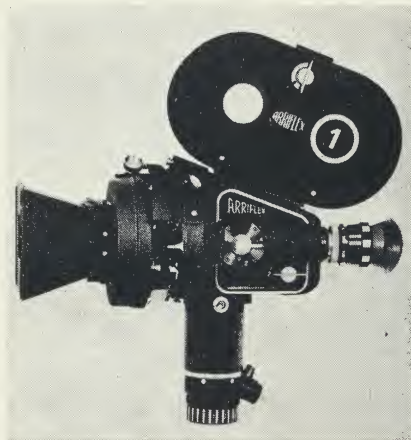


FIG. 4—View of opposite side of same camera but with metal matte box attached. Closure mechanism for finder is in center.

socket, without the need for tools or special adjustments. Ground glasses available include those for Academy, CinemaScope, 1.85-to-1 aspect ratio, and Techniscope formats. Also provided is a ground glass marked for the TV safe action area.

The new Arriflex-35 Model II-C accepts the same basic accessories as the model II-B which it supersedes. This enables owners of the previous model to switch to the new II-C and still use their present lenses, motors, magazines, matte-boxes, blimps, etc. Previous models cannot be converted to the new finder system because the improvements in the new system involve changes not only in the cover door, but in the camera body as well.

Augmenting the finder improvements detailed above are such interesting additional features as choice of metal or adjustable leather matte box, 16-volt DC motor for forward and re-

verse operation, and fully gear-driven 400-ft. magazines with automatic and reverse take-up.

Four variations of the new Model II-C Arriflex camera are available, thus making the camera readily applicable to almost any film-making requirement. There is the Model II-CV with a variable shutter; the Model IIC-GS with built in sync-signal generator and automatic clap-stick; Model II-CS for photography at 80 frames per second; and the Model II-CT for filming in the Technique process.

All models of the II-C series are supplied with the ground glass marked for the standard Academy aperture, and with the film gate aperture having corresponding dimensions. On special order, but involving no additional cost, the model II-C may be had with the film gate aperture in the standard CinemaScope dimensions of 0.735" x 0.868". ■

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